



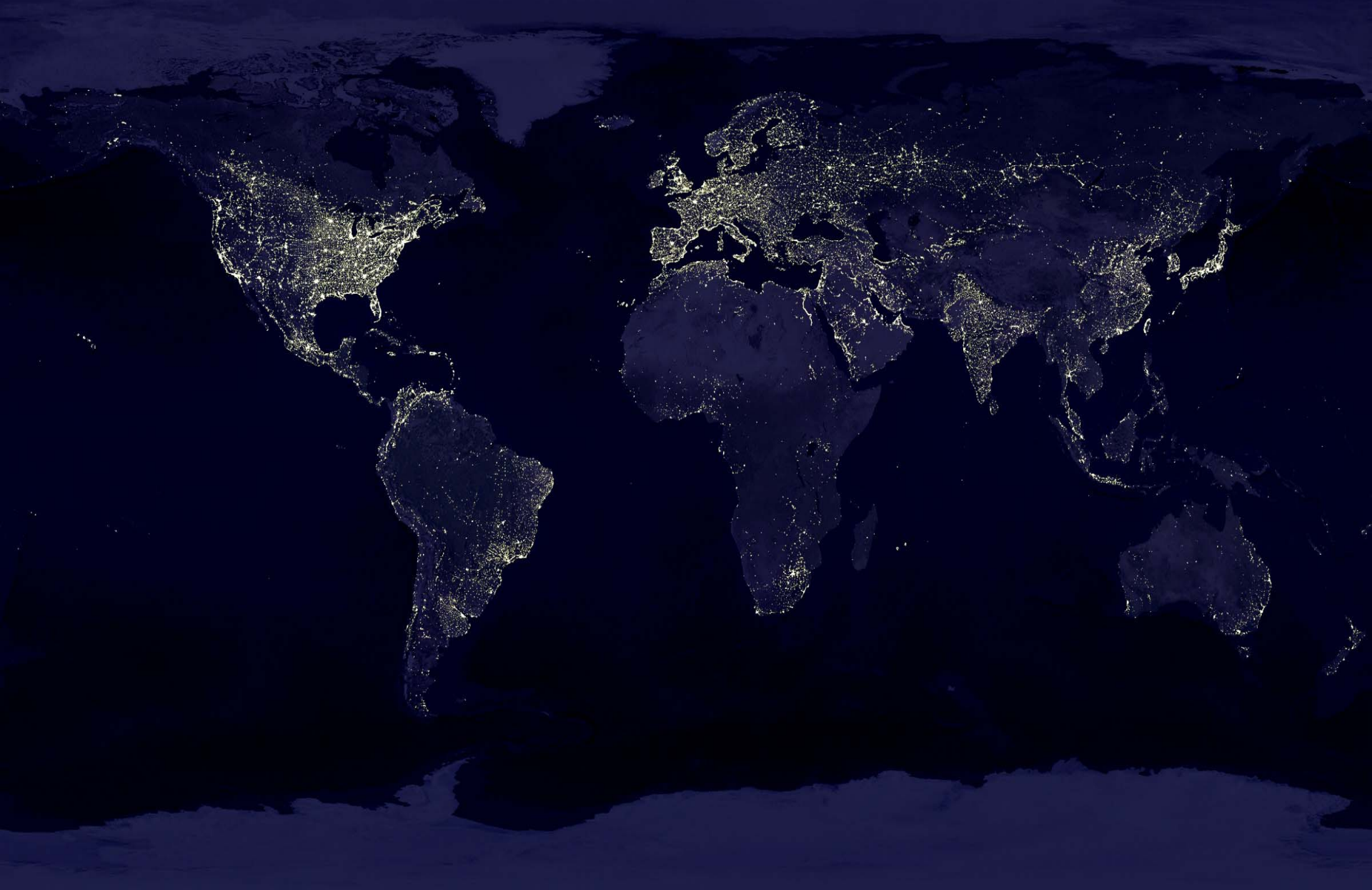
The Last Mile Electric Coop

**“The Next Great Chapter in Rural
Electrification”**

**David P. Warren, P.E.
Manager**



EARTHLIGHTS





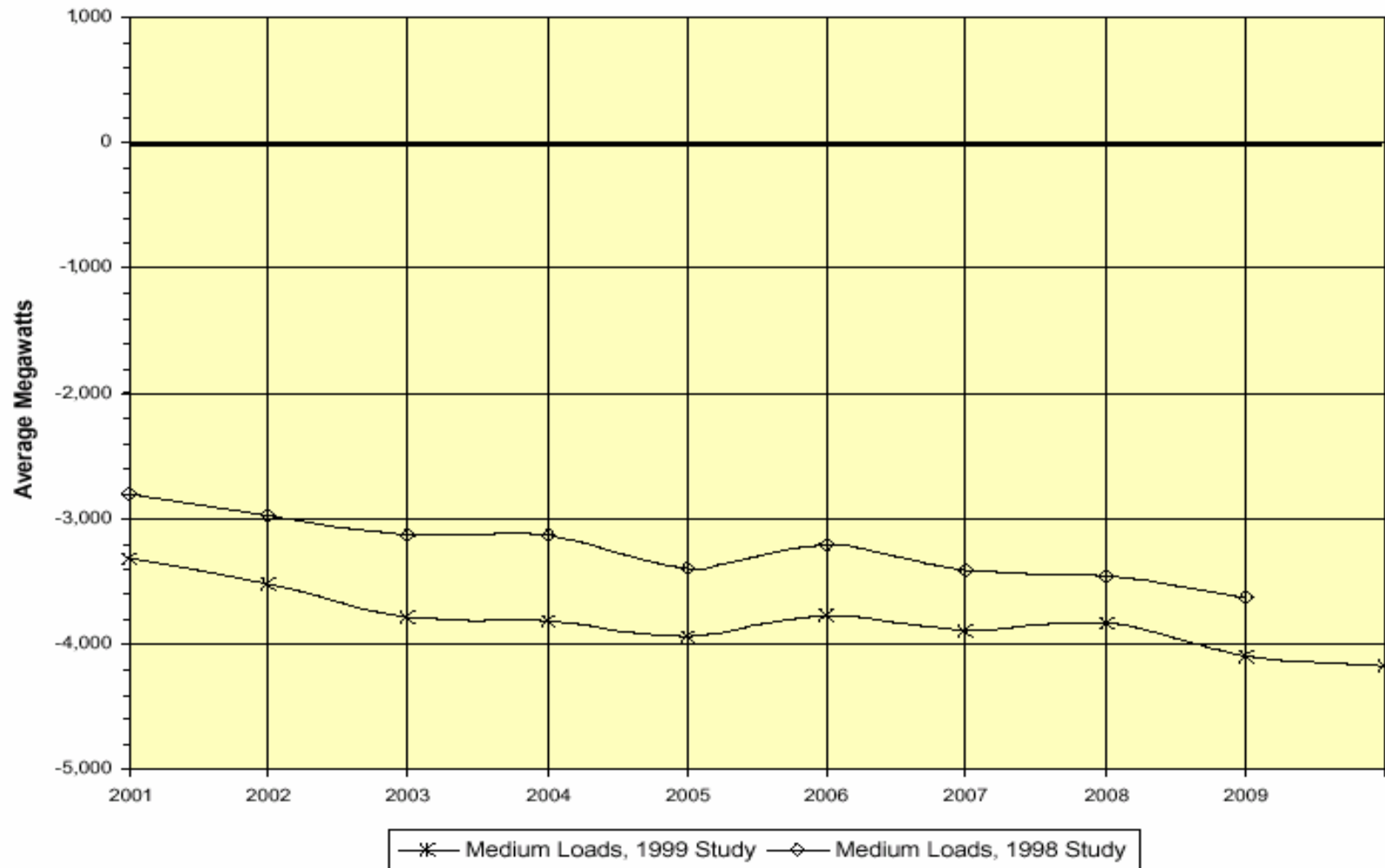
The Future

- 1. Bonneville's System is at Capacity**
- 2. Demands Loads Are Growing**
- 3. New Generation Will Cost More**
How Much More?

NW Region's Power Supply Picture

Figure 10

Regional Firm Annual Energy Surplus/Deficit Projections



Options to Meet Rising Demands

• Energy Efficiency & Conservation

• New Generation

- Gas-Fired 95% of New Generation
- Wind
- Coal
- Hydrogen
 - From Natural Gas
 - Other Sources, Coal, Water, Sodium Borohydride

Volatility

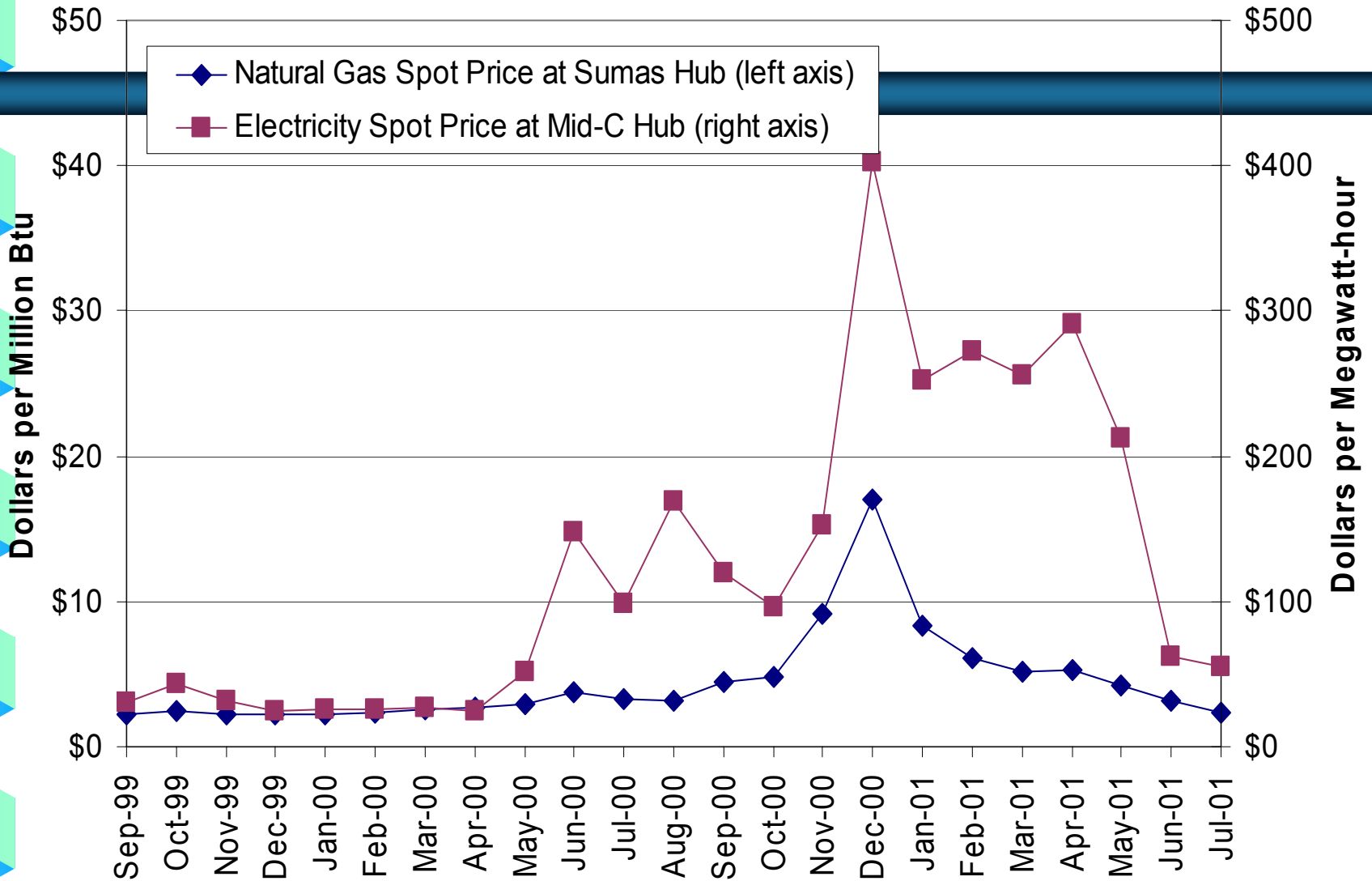
⊗ Lag Time in Response to Price Signal

- Drilling to Production – 18 months
- Pipeline Expansion 6 – 18 months
- Turbine Construction 18-36 months

⊗ Pipeline Outages

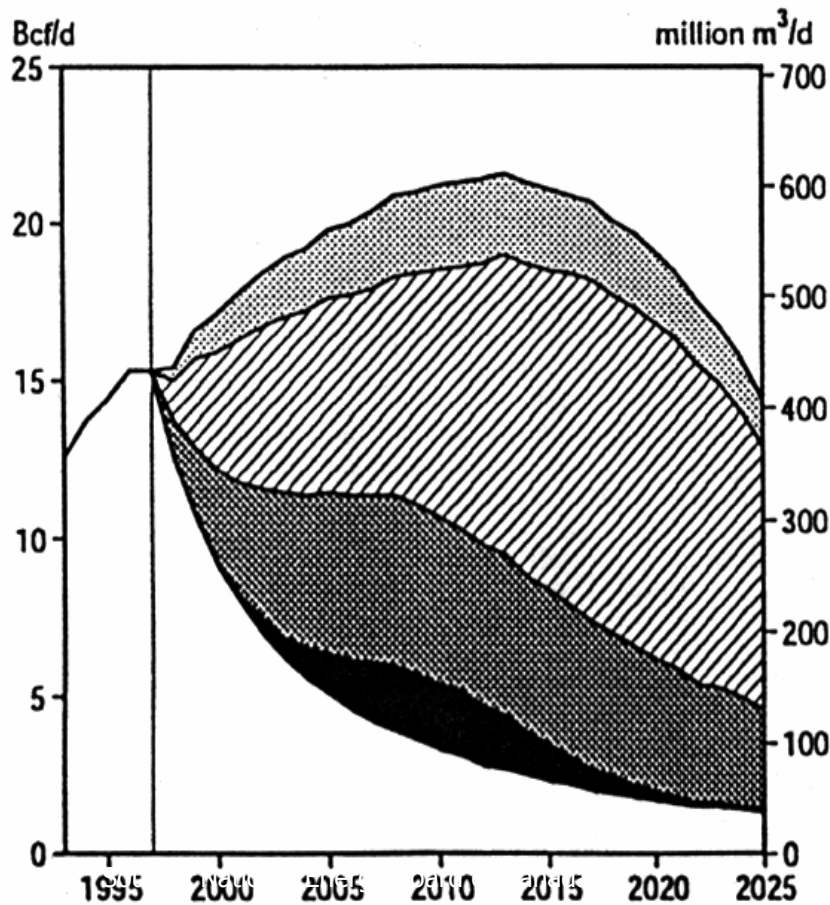
- Deliberate (Current Security Alert) or Accidental

Monthly Average Natural Gas and Electricity Spot Prices

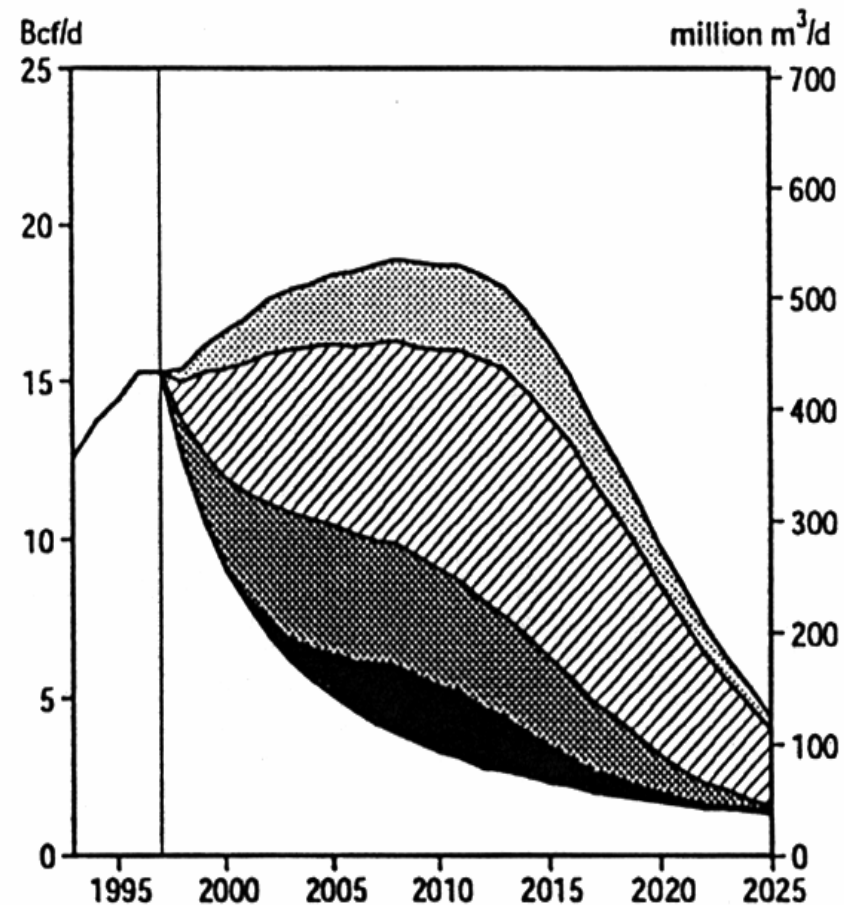


Projected Canadian Gas Production

Case 1



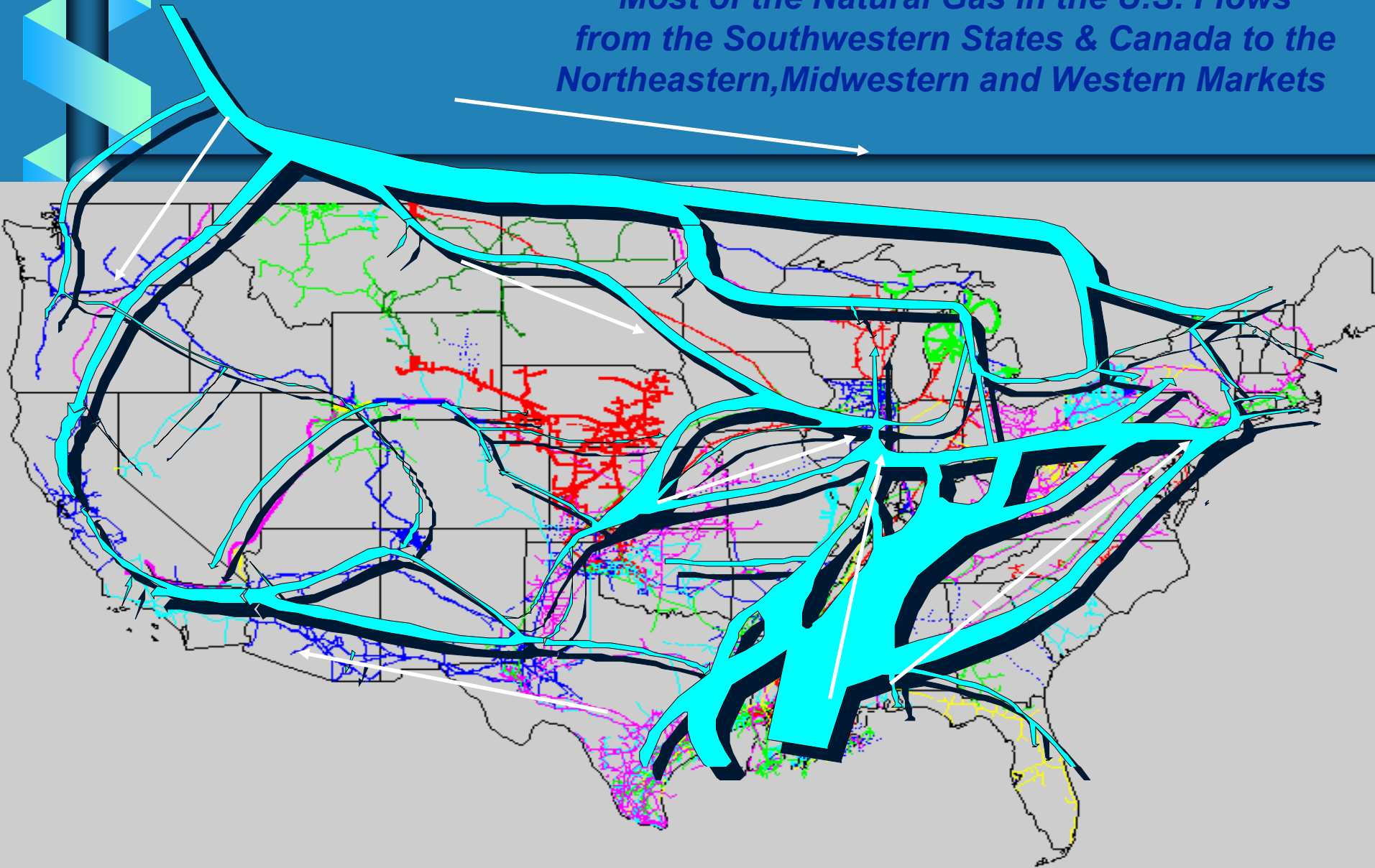
Case 2



Rem. Established Unconnected Shallow Medium Deep

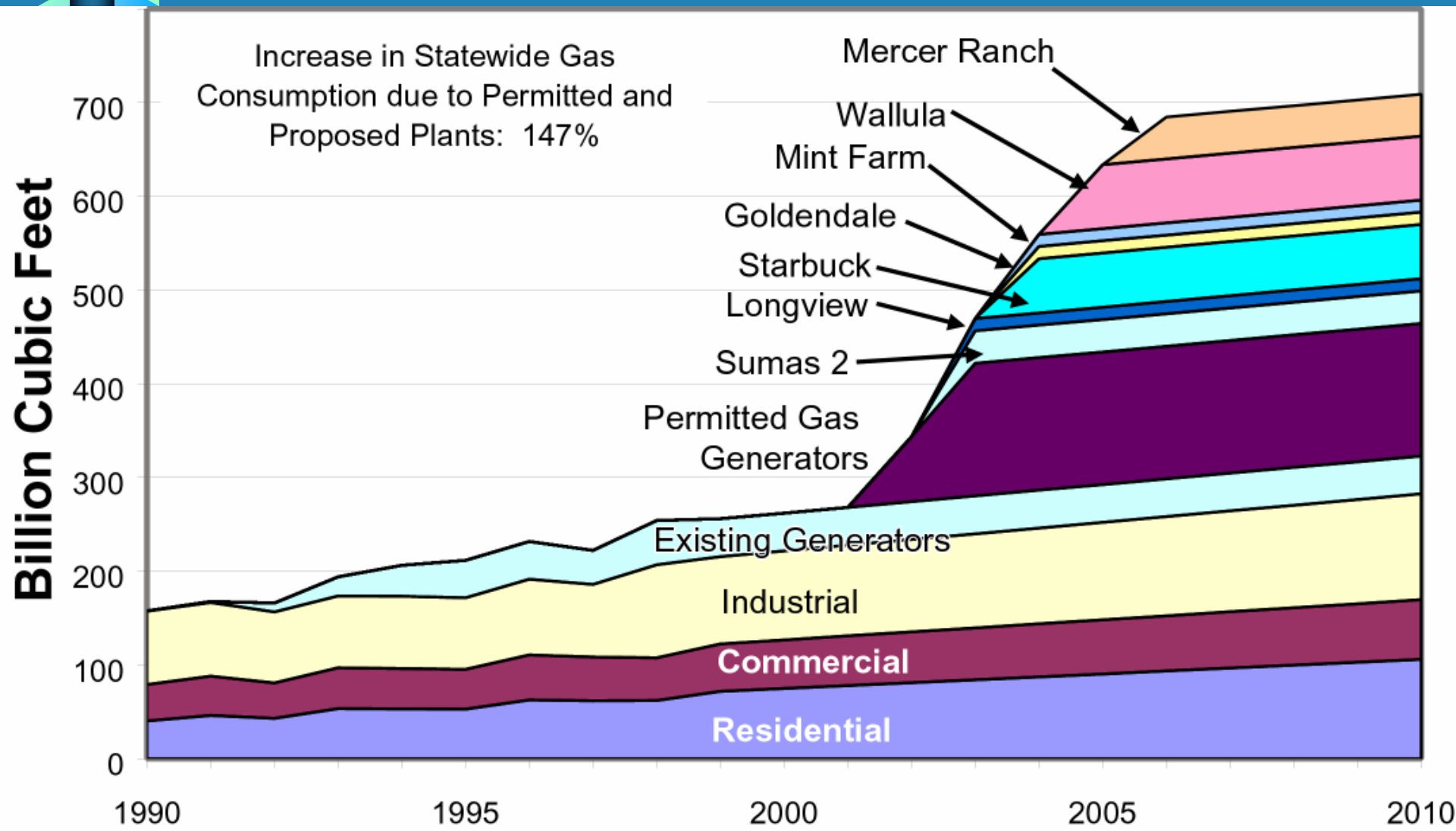
Major North American Natural Gas Transportation Corridors

Most of the Natural Gas in the U.S. Flows from the Southwestern States & Canada to the Northeastern, Midwestern and Western Markets



Shares of Natural Gas Production by Vintage of Well







Last Mile Electric Coop

***“The Next Chapter in Rural Electrification,
Economic Development and Cost-Based Power”***

The Name

The Story



Last Mile Electric Coop

***"The Next Chapter in Rural Electrification,
Economic Development and Cost-Based Power"***

- **Benton REA (WA)**
- **Big Bend Electric Coop**
- **Douglas PUD**
- **Grant Co PUD**
- **Inland Power and Light**
- **Lakeview Light & Power**
- **Nespelem Valley Elec. Coop**
- **OHOP Mutual Light Co.**
- **Parkland Light & Water**
- **Seattle City Light**
- **Tanner Electric Coop**
- **Salem Electric (OR)**
- **Wells Rural Electric (NV)**
- **Plumas-Sierra Elec. Coop (CA)**
- **Northwestern Wind Power, Inc. WA/OR**
- **Northwest Cooperative Development Center**
- **Bonneville Environmental Foundation**


Why Wind?



- **Maintain electricity independence**
- **Ease demand on the power grid**

- **Reduce vulnerability to volatile natural gas prices and supply**
- **Reduce air pollution from fossil electricity sources**





“Last Mile Electric Co-op” is Helping Overcome Challenges to Cost-Effective Renewable Energy Development

Utility Scale Wind

- **Aggregating member resources for wind resource modeling, assessment, and forecasting**
- **Working with Rural Landowners and Utilities**
- **Packaging competitive financing, technical assistance, through co-op business model**
- **Linking rural producers to rural and urban buyers and co-op members**



Last Mile Small Wind

- **Small Wind Outreach, Modeling, Training, Utility Liaison**
- **DOE/NREL Small Wind Contract Team**
 - **10 kW and Up**
 - **Tribal, Irrigation, Farm & Ranch Locations**
 - **Verification, Payback, Installation, Maintenance**
- **Coordinating equipment bulk purchases for off-grid installations (including stock watering applications)**

Last Mile Other Projects

- **Biomass**
 - **Dairy and Feedlot Efforts**
 - **Increasing Lagoon Reg's**
 - **Convert Liability into Asset**
- **Geothermal, District, Utility**
- **Solar – Stock Watering**



The Rest of the Story

- **Ag Tags (Green Tags)**
 - **w/ Bonneville Environmental Foundation**
- **Generation Imbalance**
- **Transmission Access**
- **Firming and Shaping**